Condom Use Errors and Problems Among College Men

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Background: **An essential yet understudied aspect of condom use is whether they are used correctly.**

Goal: **The goal of the study was to comprehensively evaluate condom use errors and problems reported by heterosexual college men (N = 158).**

Study Design: **A cross-sectional survey, involving a 3-month recall period, was conducted.**

Results: **Of the 158 participants, 60% did not discuss condom use with their partner before sex; 42% reported they wanted to use condoms but did not have any available; 43% put condoms on after starting sex; 15% removed condoms before ending sex; 40% did not leave space at the tip; 30% placed the condom upside down on the penis and had to flip it over; and 32% reported losing erections in association with condom use. Nearly one-third reported breakage or slippage during sex. Few participants reported errors related to lubrication, storage, and reusing condoms. Higher error scores were associated with breakage/slippage rather than with consistency of condom use.**

Conclusion: **Condom use errors were common, and error scores were associated with breakage and slippage. Increasing the focus on correcting potential user failures may be an important public health strategy.**

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CONSISTENT, CORRECT USE OF CONDOMS has been widely recommended as a public health strategy against sexually transmitted diseases (STDs), including HIV infection.[1–4] Although studies of diverse populations have focused on the consistency of condom use,[5–13] relatively few studies have assessed condom use errors.[14–19] Failure to use condoms correctly could compromise their efficacy and cause breakage and slippage.[2,16,18–20] Thus, investigators who assess only consistency of use may underestimate risk by assuming that consistent use entails correct use, thereby conferring STD/HIV protection.[21]

Spruyt et al[19] evaluated predictors of condom failure (breakage, slippage, or both), including errors in condom use, among a sample of persons attending one of three family planning clinics (located in Mexico, the Philippines, and the Dominican Republic). Opening condoms with sharp objects and unrolling condoms before putting them on were associated with breakage, and unrolling condoms before putting them on and lengthy or intense intercourse were related to slippage. A few studies have identified condom use errors among persons not attending clinics.[16,17] One study was based on data collected from the National Survey of Adolescent Males (17–22 years of age); demographic correlates of condom breakage were identified.[16] Another study was of college men and assessed eight condom errors and the frequency of two problems with condom use: breakage and slippage. Nearly 13% of the sample reported that a condom had broken in the previous month, and approximately 6% reported the condom slipped off during intercourse.[17] Although these studies made important contributions to the research literature, none have assessed a comprehensive range of potential condom use errors and problems.

One especially important population for a more comprehensive study of condom use errors and problems is youth residing in the United States. Clearly, young people in the United States are a priority population for the prevention of STD/HIV transmission.[3] Conceivably, they may make more condom use errors than adults. Research on young men could be particularly informative because they may typically control condom use.[3,9,22–25] Thus, more research is needed that quantifies condom use errors and problems

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among young men. Previous studies have focused primarily on problems such as breakage or slippage rather than assessing a comprehensive range of potential user errors.[2] Accordingly, the purpose of this study was to comprehensively evaluate condom use errors and problems as reported by a sample of college men residing in the United States.

Methods

Study Sample

From November 2000 through January 2001, 361 college men aged 18 years or older completed a questionnaire in introductory health science classes at Indiana University. All classes used for recruitment were general elective courses that attracted a diverse cross-section of Indiana University men. We selected men who reported putting condoms on themselves in the previous 3 months, who had never been married, and who identified themselves as heterosexual. The study protocol was approved by the institutional review board.

Data Collection

Classes were selected in which no instruction on condom use had occurred. A research assistant briefly described the survey and asked students to participate. Participants were told the study would investigate condom use mistakes. Questionnaires were completed anonymously and placed in a box. No incentives were provided.

Measures

The questionnaire assessed background variables, number of sex partners, frequency of sex and condom use, 24 condom use errors, and 4 potential problems. The majority of errors assessed were relevant to technical use of condoms; however, errors related to availability and communication were also assessed. On the basis of previous research, a 3-month recall period was selected.[26–28] Questionnaire development was informed by an earlier study of condom use errors conducted among college men[16] and by widely cited condom use guidelines.[1,2] The questionnaire was refined through pilot testing with college men. Sex was defined as putting the penis in a partner's mouth, vagina, or rectum.

Data Analysis

Condom use consistency was calculated by the percentage of times condoms were used for sex. Specifically, the frequency of condom use was divided by the frequency of sex during the previous 3 months and multiplied by 100. The percentage of times condoms were put on by the male (not his partner) was calculated on the basis of the reported frequency of putting the condom on himself, divided by the total number of times a condom was used during the previous 3 months.

Discrepancies between reported use and ideal use, as established by published guidelines,[1,2] were classified as condom errors and problems (Table 1). We calculated the percentage of participants who reported errors or problems at least once during the recall period of 3 months. For those who reported the specific error or problem, a mean was calculated for the percentage of times when using a condom that they experienced that error or problem.

A summative error score was calculated for each participant. One point was given for each error reported to occur at least once (listed as technical, availability, and communication errors in Table 1). Technical errors under specific circumstances (Table 1) were not included in this score, leaving 23 errors that were used to create this summative error score. Problems were classified as two types: (1) breakage and slippage during sex and (2) erection problems related to condom use.

The Mann-Whitney *U*-test was used to assess significant differences in mean error scores between men reporting and not reporting (1) breakage or slippage, (2) ever receiving condom use instruction, (3) ever unintentionally causing a pregnancy, (4) erection problems associated with condom use, and (5) a history of STD. Finally, we investigated whether consistency of condom use was associated with error scores by using the Spearman rho rank-order correlation coefficient.

Results

After applying the selection criteria, we analyzed data from 158 men. Mean age was 20.2 years (SD, 1.8). Ninety percent were white, 6% were black, and the remainder identified themselves as belonging to other races. These demographics approximated the overall composition of the student body (mean age, 20.3 years; 89% white and 5% black). Those initially excluded from the analyses included 97 men who did not report having sex in the previous 3 months, 11 who were married, and 10 who identified themselves as gay or bisexual. Of the remaining 243 men, 72 who had not used condoms and 13 who had not put condoms on themselves were also excluded from the analyses, leaving an eligible sample of 158 men. Of interest, the 72 men who reported not using condoms constituted 30% of the 243 men who were classified as sexually active single heterosexuals.

Frequency of sex averaged 17.3 times in the previous 3 months (SD = 19.1). The total number of condom use events reported by the sample was 1692. The mean percentage of times a condom was used for sex (condom use consistency) was 73.6% (SD, 32.1). The mean percentage of condom use events in which the man (rather than his partner) put the condom on himself was 97.3% (SD, 9.8).

TABLE 1. Percentage of Sample Reporting the Occurrence of Each Condom Use Error or Problem at Least Once During the Previous 3 Months and the Mean Percentage of Condom Use Occasions During Which Each Event Occurred Among Those Reporting the Error or Problem (N = 158)

Measure	Percentage of Sample Reporting the Event	Mean % of Condom Use Occasions on Which this Event Occurred
Technical error		
Did not check condom for visible damage	74.5	97.7
Did not check expiration date	61.4	. . .*
Put condom on after starting sex	42.8	49.8
Did not hold tip and leave space	40.4	90.5
Put condom on the wrong side up (had to flip it over)	30.4	36.0
Used condom without lubricant	19.2	67.1
Took condom off before sex was over	15.3	50.6
Condom slipped off while withdrawing penis	13.2	24.0
Started sex before condom was unrolled to base of penis	8.8	54.0
Used a condom that was stored >1 month in a wallet	7.9	46.3
Ejaculate dripped onto partner's mouth, genitals, or anus	7.6	40.7
Used oil-based lubricant on condom	4.7	35.3
Did not store condom in a cool, dry location	3.3	. . .*
Unrolled condom and then tried to put it on the penis	2.1	75.0
Condom contacted sharp object (teeth, jewelry, fingernails)	2.1	100.0
Knowingly used expired condom	2.0	43.3
Used a condom again during same sexual session	1.4	NA
Knowingly used a damaged condom	0.6	3.8
Used condom again for another sexual session	0.0	NA
With specific circumstances		
Switched between vaginal, oral, or anal sex	53.2	
Did not change to a new condom when switching	81.2	98.0
Availability error		
Wanted condom but did not have one	42.4	26.4
Had a problem with a condom; another not available	17.6	38.3
Wanted a water-based lubricant but not available	7.9	59.5
Communication error		
Did not discuss condom use before sex	59.6	. . .*
Problems		
Condom broke	29.0	27.6
Condom slipped off during sex	13.1	13.6
Lost erection before condom was put on	21.6	42.5
Lost erection after condom was on and sex had begun	19.6	27.6

*This was counted as an error only if it was not done at all during the previous 3 months. NA = missing data.

Nearly one third of the error items were reported by at least 30% of the sample. The two most common technical errors were failing to check a condom for visible damage (74%) and not checking the expiration date (61%) (Table 1). Forty-three percent put a condom on after starting sex, and 15% took a condom off before sex was over. Furthermore, 40% did not leave a space at the tip, and just less than one third (30%) placed the condom upside down on the penis and had to flip it over. In contrast, relatively few errors were reported regarding lubrication, storage, and reusing condoms.

Several of the findings suggested a lack of condom availability or communication before sex occurred. For example, 42% reported wanting to use a condom but not having one available; 18% had a problem with a condom but did not have another available; and 60% of the sample did not discuss condom use with their partner before sex. More than half reported switching between vaginal, oral, or anal sex, and the majority of them (81%) did not change to a new condom between behaviors, as recommended by Centers for Disease Control and Prevention (Atlanta).[1]

Thirty-five percent of the sample reported condom breakage or slippage during sex (not in Table 1). Breakage was the most common problem (29%). Approximately 13% reported that condoms had slipped off during sex. Nearly 14% reported that a condom slipped off during withdrawal. Thirty-two percent also reported losing their erections in association with condom use (not in Table 1). Erection problems before putting on the condom and after the condom was on and sex had begun were each reported by approximately one fifth of the sample.

Table 1 also shows the mean percentage of condom use occasions in which errors and problems occurred among those who experienced, at least once, the specific items listed. For example, among those who reported putting the condom on after starting sex, a mean of 50% of the condom use occasions involved this error.

A summative error score was calculated. The mean error

TABLE 2. Comparison of Mean Error Scores Between Men Reporting Selected Events (N = 158)

Reported Event	Mean Error Score (SD)	*P* Value*
Condom breakage or slippage		
Yes (35.0%)	5.5 (2.1)	0.0001
No (65.0%)	4.1 (2.2)	
Ever unintentionally caused a pregnancy		
Yes (12.7%)	5.5 (1.9)	0.01
No (87.3%)	4.4 (2.1)	
Ever received condom use instruction		
Yes (82.2%)	4.4 (2.1)	0.08
No (17.3%)	5.1 (2.2)	
Recent† erection problems associated with condom use		
Yes (32.0%)	5.1 (2.5)	0.17
No (68.0%)	5.5 (1.9)	
Ever had a sexually transmitted disease		
Yes (2.5%)	4.0 (2.5)	0.79
No (97.5%)	4.5 (2.1)	

*Based on the Mann-Whitney *U*-test statistic.
†In past 3 months.

score was 4.5 (SD, 2.1), with a range of 0 to 10. Table 2 shows a comparison of mean error scores for men reporting and not reporting each of five events (Table 2). As shown, men who reported breakage and/or slippage had significantly higher error scores than men not reporting these problems. Also, men who reported believing they had unintentionally impregnated someone had higher error scores than those who did not report this belief. Most participants reported they had been instructed on correct condom use, and a trend was observed suggesting that those receiving instruction had lower error scores. Error scores did not differ on the basis of whether a man had erection problems associated with condom use or a history of STD.

Consistency of condom use was not significantly associated with error scores (Spearman rho = −0.097; $P = 0.24$). Similarly, consistency scores were not significantly associated with the events listed in Table 2.

Discussion

A sizable proportion of college men reported a variety of errors and problems that could contribute to condom failure or decreased condom efficacy for STD prevention. Moreover, some of the reported errors occurred frequently. For example, among the 30% who reported that they put the condom on with the wrong side up, this error occurred more than one-third of the times they used a condom. Three widely understudied errors that could compromise the protective value of condoms were reported by a substantial proportion of men: (1) putting condoms on after sex started, (2) using the same condom while switching between vaginal, anal, or oral sex, and (3) having erection problems associated with condom use. The latter issue may be especially important for young men. In addition to slippage, erection problems may serve as strong barriers to subsequent condom use. Because condom use occurs within an interpersonal context and a variety of psychosocial factors may influence its occurrence, young men may benefit from having this issue addressed in condom education programs.

In addition, a large proportion of respondents reported lack of communication about condoms before sex began and lack of condom availability. Previous studies have established that communication about condom use and lack of condom availability are strong predictors of subsequent condom use.[29]

Consistent with the findings of other studies,[2,17,20] breakage and slippage were common problems, reported by more than one third of the sample. However, rates of breakage and slippage across these studies are not easily comparable because recall periods of different lengths were used. These problems may be a result of condom use errors or loss of erection rather than condom defects. It is important to note that those who reported breakage/slippage had significantly higher error scores. Although few of our respondents reported that condoms they were using contacted sharp objects, those who did also reported condom breakage. This is consistent with the finding of Spruyt et al[19] that opening condom packages with sharp objects was associated with condom breakage.

The findings also suggest the possibility that causing an unintentional pregnancy may be associated with improved condom use skill; however, the data did not suggest a similar association with a history of STD. We did not observe an association between error scores and recent condom-related erection problems; this finding suggests that erection problems may occur independently from the mechanical task of condom application. The observed trend in condom use instruction and condom error scores suggests that formalized condom instruction could be an important method of promoting correct condom use. Further studies that measure previous condom instruction with greater precision may find significant associations between this variable and mean condom error scores.

Finally, our finding that error scores were not significantly associated with consistency of condom use suggests that even men who use condoms consistently may not be using them correctly. This observation is extremely important because it clearly suggests that merely assessing consistency of condom use may underestimate the level of STD/HIV risk for young men and artificially reduces estimates of condom efficacy. The findings further suggest that studies failing to find significant associations between condom use and STD incidence may be vulnerable to type 2 error caused by incomplete assessment of the predictor variable.[21] In the wake of a recent report that clearly defined a need to study the efficacy of condoms against STDs,[30] future research should go beyond assessment of condom use consistency and involve comprehensive measurement of

condom use errors and problems. Although comprehensively assessing each of the errors and problems investigated in the current study could present multiple challenges in the context of large prospective trials, our findings suggest that at least some errors and problems may occur frequently enough to warrant their assessment in these studies. One feasible approach may be to comprehensively assess condom errors and problems during the pilot phase of large trials and subsequently use the findings to guide instrument development. The resulting instrumentation will then be more likely to capture key assessments of correct condom use in the population being investigated.

Limitations

Findings are limited by the use of retrospective self-reporting and lack of a representative sample. The sample was predominantly white and comprised heterosexual, never-married college men at a Midwestern university; therefore, the findings may not be generalizable to other populations of men or women. Further research is needed with diverse populations including gay and bisexual youths and young women. It should also be noted that our findings relative to the observed frequencies of condom errors and problems are descriptive and cannot be used to estimate risk of STD acquisition or transmission, i.e., some errors constitute far greater compromise in protection than others. Clearly, future research efforts should attempt to establish a hierarchy of errors that reflects degree of compromise in the protective value of condom use.

Implications for Prevention

A potentially important implication of the findings is that clinic-based counseling protocols may be improved through the addition of instruction on correct condom use. Evidence suggests that brief, clinic-based condom skills programs may reduce STD reinfection rates among men.[31] Evidence from project RESPECT suggests that this type of instruction may be most effective when it is delivered interactively.[32]

Another potentially important implication of the findings is that community-based education programs that address condom use could include specific instruction on correct condom use. A brief assessment, such as the one in this study, followed by instruction tailored to address identified errors and problems, may be an effective means of reducing risk of STD among men not attending STD clinics. Findings of the current study provide direction for education programs designed to promote correct condom use among college men. Clearly, these programs should focus on communication and planning in addition to multiple technical aspects of condom use and application. Education programs could also address errors related to specific circumstances such as not using condoms throughout vaginal, oral, and anal sex and not changing condoms between these behaviors.

Conclusion

A substantial proportion of college men surveyed reported a variety of errors and problems that could contribute to condom failure. Error scores were associated with breakage and slippage but not consistency of condom use. Our study only begins to address this neglected area of research. Findings also suggest that measures of correct condom use should be assessed in studies that evaluate condom efficacy. Given that condoms are an important means of preventing STD/HIV infection, substantial public health benefit could accrue from further research assessing condom use errors and problems.

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